

REMARKS

Claims 1, 4, 11, 14, 18, 21, 32, 33, 35, 36, 52, 53, 55, 58, 65-78 and 86-117 are pending, with claims 1, 4, 65, 72, 86, 93, 103 and 111 being independent. Claims 65 and 72 have been amended, and claims 103-117 have been added. No new matter has been introduced.

Claims 1, 11, 18, 32, 35, 52, 55, 61, 65-71, 86-92 and 100-102, including independent claims 1, 65 and 86, have been rejected as being unpatentable over Yamazaki (EP 1 003 223 A2) in view of Karr (U.S. Patent No. 6,534,425). With respect to claim 1 and its dependent claims, applicant requests reconsideration and withdrawal of this rejection because one of ordinary skill in the art would have had no motivation to combine Yamazaki and Karr in the manner set forth in the rejection.

Claim 1 recites, among other elements, forming a resist pattern on a conductive film by using one of a photomask having a diffraction grating pattern and a reticle having a diffraction grating pattern, such that a thickness of an edge portion of the resist pattern is smaller than a thickness of a middle portion of the resist pattern, and forming a gate electrode by etching using the resist pattern, such that a thickness of an edge portion of the gate electrode is smaller than a thickness of a middle portion of the gate electrode. Recognizing that Yamazaki does not show a resist pattern having an edge portion with a thickness that is smaller than a thickness of a middle portion of the resist pattern, the rejection relies on Karr as describing use of a reticle with a diffraction grating to form a tapered photoresist pattern which can be transferred to an underlying structure through dry etching. The rejection then argues that it would have been obvious to modify Yamazaki so as to use the reticle pattern of Karr "because this is a suitable method in which to make a tapered gate electrode structure."

Assuming for sake of argument that Karr's method would be suitable, applicant strongly disagrees that the mere "suitability" of the approach described by Karr would have provided sufficient motivation to modify the process of Yamazaki, which involves a specific technique for forming a gate electrode having a tapered configuration. In particular, Yamazaki, in paragraph [0209] and Fig. 26, states that the taper angle depends on the ratio of tungsten to resist, and, in paragraph [0210], further notes that a gate electrode having a desired taper angle may be

obtained by using an ICP etching apparatus and by suitably determining the bias power density or reaction gas flow ratio. In view of this complete description of how to obtain a gate electrode having a desired taper angle, a person of ordinary skill in the art would not have been motivated to turn to the significantly different approach described by Karr. Accordingly, for at least this reason, the rejection of claim 1 and its dependent claims should be withdrawn.

Similarly to claim 1, each of independent claims 65 and 86 recites forming a resist pattern over a conductive film by using one of a photomask and a reticle, with a thickness of an edge portion of the resist pattern being smaller than a thickness of a middle portion of the resist pattern, and forming a gate electrode by etching using the resist pattern, with a thickness of an edge portion of the gate electrode being smaller than a thickness of a middle portion of the gate electrode. As with claim 1, applicant requests reconsideration and withdrawal of the rejection of claims 65 and 86, and their dependent claims, because one of ordinary skill in the art would have had no motivation to combine Yamazaki and Karr in the manner set forth in the rejection.

Claims 4, 21, 33, 36, 53, 58, 72, 74-78, 93 and 95-99, including independent claims 4, 72 and 93, have been rejected as being unpatentable over Yamazaki in view of Karr and further in view of Tabata (U.S. Patent No. 5,744,381). Similarly to claims 1, 65 and 86, each of claims 4, 72 and 93 recites forming a resist pattern over a conductive film, with a thickness of an edge portion of the resist pattern being smaller than a thickness of a middle portion of the resist pattern, and forming a gate electrode by etching using the resist pattern, with a thickness of an edge portion of the gate electrode being smaller than a thickness of a middle portion of the gate electrode. Accordingly, applicant requests reconsideration and withdrawal of this rejection for the reasons discussed above, and because Tabata would not have motivated one of ordinary skill in the art to combine Yamazaki and Karr in the manner set forth in the rejection.

Similarly to the other independent claims, each of new independent claims 103 and 111 recites patterning a photoresist layer to form a photoresist pattern which includes a first pattern portion and a second pattern portion with a smaller thickness than the first pattern portion, and etching a conductive layer using the photoresist pattern as a mask to form a gate electrode over the semiconductor film, the gate electrode having a first electrode portion and a second electrode

Applicant : Hideto Ohnuma et al.
Serial No. : 09/925,512
Filed : August 10, 2001
Page : 17 of 17

Attorney's Docket No.: 12732-068001 / US5147/5193

portion with a smaller thickness than the first electrode portion. Accordingly, each of these claims, and their dependent claims, are believed to be allowable over the art of record at least for reasons similar to those discussed above.

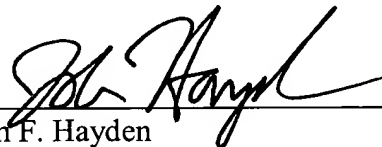
Applicant submits that all claims are in condition for allowance.

Enclosed is a \$300 check for late filing of an information disclosure statement fee (\$180) and for a one month extension of time (\$120). Please apply any other charges or credits to deposit account 06-1050.

Respectfully submitted,

Date: _____

8/15/05



John F. Hayden
Reg. No. 37,640

Customer No. 26171
Fish & Richardson P.C.
1425 K Street, N.W., 11th Floor
Washington, DC 20005-3500
Telephone: (202) 783-5070
Facsimile: (202) 783-2331

40286470.doc